

REMARKS

Claims 1-10, 13, and 15-33 were pending in the above-identified application when last examined. This response amends claims 1, 13, and 29.

Claims 1, 2, 7-9, 13, 15-18, and 22-33 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,625,298 (Hirano). Applicant respectfully traverses the rejection.

Independent claim 1 distinguishes over Hirano at least by reciting, "a probe comprising a semiconductor die and probe tips rigidly attached to the semiconductor die." In contrast, Hirano discloses a device having a compliant attachment of probe tips. For example, with reference to Fig. 2, Hirano beginning at column 4, line 6 states, "The cavity 140, positioned below each electrode 101, acts in conjunction with the flexible film 130 to provides some vertical, i.e. a spring, movement to each electrode."

In accordance with an aspect of Applicant's invention, a probing system in which probe tips have rigid or non-compliant mounting can inelastically deform the terminals of a device being tested and thereby improve the planarity of the terminal. Before Applicant's invention it was generally believed that probing systems needed to be compliant to avoid deforming terminals. Consistent with this belief, Hirano teaches use of cavities and a flexible film to provide a springy attachment of the probe tips to a substrate. Hirano fails to suggest the desirability of deforming terminals during probing or a rigid attachment of probe tips that can cause the desired deformation. Accordingly, claim 1 is patentable over Hirano.

Claims 2, 7-9, and 29-33 depend from claim 1 and are patentable over Hirano for at least the same reasons that claim 1 is patentable over Hirano.

Independent claim 13 distinguishes over Hirano at least by reciting, "forming contact pads directly on the semiconductor die; and forming conductive bumps on a surface of the contact pads, wherein tops of the conductive bumps provide surfaces that during testing directly contact the terminals of the semiconductor device." Forming structures directly on a die as illustrated, for example, in Applicant's Figs. 9A to 9D, can provide non-compliant probes suitable for planarizing the terminals of a device being tested. In contrast, Hirano discloses forming electrodes 101 and leads 110 on a flexible film 130. It would not have been obvious to modify Hirano to form contact pads directly on a semiconductor die because Hirano teaches a need to have a flexible probe. Accordingly, claim 13 is patentable over

Hirano.

Claims 15-18 and 22-29 depend from claim 13 and are patentable over Hirano for at least the same reasons that claim 1 is patentable over Hirano.

For the above reasons, Applicant requests reconsideration and withdrawal of this rejection under 35 U.S.C. § 102.

Claims 3-6 and 10 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hirano in view of U.S. Pat. No. 5,804,983 (Nakajima). Applicant respectfully traverses the rejection.

Claims 3-6 and 10 depend from claim 1, which is patentable over Hirano for at least the reasons given above. In particular, Hirano fails to disclose or suggest probe tips rigidly attached to a semiconductor die. The Examiner cites Nakajima for disclosing "a probe card 22 including a receptacle" and for disclosing a positioning system. However, Nakajima like Hirano teaches compliant probes and fails to suggest, "probe tips rigidly attached to the semiconductor die" as recited in claim 1. Accordingly, claim 1 and claims 3-6 and 10, which depend from claim 1, are patentable over the combination of Hirano and Nakajima.

For the above reasons, Applicant requests reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

Claims 19-21 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hirano in view of U.S. Pat. No. 5,513,430 (Yanof). Applicant respectfully traverses the rejection.

Claims 19-21 depend from claim 13, which is patentable over Hirano for the reasons given above. The Examiner cites Yanof for disclosing particular methods for forming holes. However, such a teaching when considered in combination with Hirano still fails to suggest, "forming the probe tips comprises: forming contact pads directly on the semiconductor die; and forming conductive bumps on a surface of the contact pads, wherein tops of the conductive bumps provide surfaces that during testing directly contact the terminals of the semiconductor device." Accordingly, claim 13 and claims 19-21, which depend from claim 13, are patentable over the combination of Hirano and Yanof.

For the above reasons, Applicant requests reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

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In summary, Applicant respectfully requests allowance of the application including claims 1-10, 13, and 15-33 as amended above. Please contact the undersigned attorney at (408) 927-6700 if there are any questions concerning the application or this document.

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Respectfully submitted,



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